

MARSHAL VICK, C 17

AUTHOR: MARKUSHEVICH, L.A.

42-1-13/13

TITLE: Letter to the Editor (Pis'mo v redaktsiyu)

PERIODICAL: Uspekhi Matematicheskikh Nauk, 1958, Vol 13, Nr 1, p 239 (USSR)

ABSTRACT: This is a correction of a theorem contained in the paper
on rings of functions being continuous on a circle (Uspekhi
Matematicheskikh Nauk, 1957, Vol.12, Nr.4, pp.327-334).

AVAILABLE: Library of Congress
Card 1/1 1. Mathematics-Errors

ICP, [redacted] (Steen, L. J.) (SS-1); MARK SHAW (D.C., [redacted]);
[redacted], N.Y., [redacted].

[redacted] Faculty of Sciences. Mat. pres. no. 174-11
([redacted])

MARKUSHEVICH, L. A., CAND PHYS-MATH SCI, "APPROXIMATION
BY POLYNOMIALS OF CONTINUOUS FUNCTIONS ON JORDAN ARCS IN
THE SPACE OF MANY COMPLEX VARIABLES." MOSCOW, 1960.(MOSCOW
STATE UNIV IM M. V. LOMONOSOV). (KL, 3-61,204).

16.1600

81392

S/020/60/132/06/11/068

C111/C222

AUTHOR: Markushevich, L.A.

TITLE: The Structure of a Ring of Continuous Functions on a Circle With
Two Generatrices

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 6, pp. 1265-1268

TEXT: On $|\zeta| = 1$ the author considers the ring $[\varphi, f]$ of continuous
functions with the generators $\varphi(\zeta)$ and $f(\zeta)$. The author asks for con-
ditions which have to be satisfied by φ and f in order that the ring
 $[\varphi, f]$ is not identical with the ring C of all continuous functions.

The problem was treated by J. Wermer (Ref. 4,5). The author shows that the
results of Wermer can be obtained under weaker assumptions. Instead of the
analyticity of φ and f on $|\zeta| = 1$ and $\varphi'(\zeta) \neq 0$ for $|\zeta| = 1$ it
is demanded: $\varphi'(\zeta)$ and $f(\zeta)$ have to satisfy the Hölder condition.
The author mentions M.V. Fedoryuk and D.A. Anosov. There are 6 references:
2 Soviet and 4 American.

PRESENTED: February 29, 1960, by I.N. Vekua, Academician

SUBMITTED: February 26, 1960

Card 1/1

MARKUSHENICH, L.J.

Approximate ref.: front name functions of ζ -symbols on Jordan
arches in a space of several complex variables. Sitz. math. natur.
b no. 38528-545 My. 11 195. (NIRA 18:8)

BARKAN, Ya.D., inzh.; MARKUSHEVICH, N.S., inzh.

Use of Multiscale gages for load distribution between units
of thermal electric power plants. Elek. sta. 34 no.8:25-28
Ag '63. (MIRA 16:11)

MARKUSHEVICH, N.S., inzh.

Automatic frequency drop preceded by the operation of a selective
automatic reclosing system. Elek. sta. 35 no.7:71-73 Jl '64.
(MTRA 17:11)

BARKAN, Ya.I.; MARKUSHEVICH, N.S.

Determination of statistical voltage quality criteria. Elektrichestvo
no.2:11-15 F '65. (MIRA 18:3)

1. Glavlatvenergo.

L 45088-66

ACC NR: AR6027179

SOURCE CODE: UR/0271/66/000/005/A006/A006

AUTHOR: Barkan, Ya. D.; Markushevich, N. S.

*35
B*

TITLE: Determination of the parameters of temperature compensation of tunnel diodes

SOURCE: Ref. zh. Avtomat telemekh i vychisl tekhn, Abs. 5A26

REF SOURCE: Uch. zap. Rizhsk. politekhn. in-t, v. 14, 1965, 211-221

TOPIC TAGS: temperature compensation, tunnel diode

ABSTRACT: The paper presents basic relationships and some results of experiments in adjusting the temperature compensation of various electronic automation devices which have measuring elements based on tunnel diodes. Some considerations on accuracy in most adverse cases are presented. It is concluded that the temperature compensation of the threshold of response of a tunnel diode by means of an avalanche diode ensures high accuracy and is technically expedient. [Translation of abstract]

[DW]

SUB CODE: 09/ SUBM DATE: none

Card 1/1 blg

MARKUSHEVICH, V. M.

"Inverse problem for travel times of body waves."

paper submitted for Intl Symp on Geophysical Theory and Computers, Rehovoth,
Israel, 13-23 June 1965.

GERVEL, M.L.; MARKUSHEVICH, V.M.

Study on the indeterminacy involved in determining the speed of a seismic wave by means of a hodograph. Dokl. AN SSSR 163 no. 6:1377-1380 Ag '65. (MIRA 18:8)

1. Institut fiziki Zemli' im. V.V. Shmidta AN SSSR. Submitted February 6, 1965.

MARKUSHIN, A.I.

Age changes in the morphological composition of the blood of cattle.
Trudy Inst.morf.zhiv. no.31:85-87 '60. (MIRA 13:6)

1. Saratovskiy zooveterinarnyy institut.
(Blood) (Cattle--Anatomy)

MARKUSHIN, A. P.

Agriculture & Plant & Animal industry

Principles of agriculture animal breeding. Saratovskoe obl. gos. izd-vo, 1951.

Monthly List of Russian Accessions, Library of Congress, April 1952. UNCLASSIFIED.

MARKUSHIN, A. P.

"Late Summer Breeding and the Utilization of Cattle for Production Purposes." Dr Agr Sci, Moscow Veterinary Acad, Saratov, 1953. (RZhBiol, No 3, Oct 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (10)

So: Sum. No. 481, 5 May 55

MARKUSHIN, Aleksey Pavlovich

[Prolonging the productive years of cows and bulls] O dolgoletnem
ispol'zovanii korov i bykov. Moskva, Sel'khozgiz, 1957. 105 p.
(Cattle--Breeding) (MLR 10:11)

MARKUSHIN, A.P.

MARKUSHIN, A.P., doktor sel'skokhozyaystvennykh nauk.

Importance of prolonged use of cattle. Zhivotnovodstvo 20 no.2:
68-74 P '58.
(MIRA 11:1)

1. Zavedyushchiy kafedroy razvedeniya sel'skokhozyaystvennykh
zhivotnykh Saratovskogo zootekhnicheskovo-veterinarnogo instituta.
(Cattle)

LADAN, Panteleymon Yefimovich, prof.; MARKUSHIN, A.P., prof.; SINITSYN, M.M., prof.; USTIMENKO, L.F., red.; PEVZNER, V.I., tekhn.red.; ZUBRILINA, Z.P., tekhn.red.

[Stockbreeding and specialized animal husbandry] Razvedenie sel'skokhozisistvennykh zhivotnykh i chastnoe zhivotnovodstvo. Moskva, Gos.izd-vo sel'khoz.lit-ry, 1960. 431 p.

(MIRA 13:10)

1. Novocherkasskiy zooveterinarnyy institut (for Ledan, Sinitsyn).
2. Saratovskiy zooveterinarnyy institut (for Markushin).
(Stock and stockbreeding)

MARKUSHIN, A.P., prof., doktor iel'kogo. nauk, nausl. rezyter¹
nauki n.F.R.; BABKIN, I.I., red.

[Effective life of farm animals] Iroki ispol'zovania sel's-
skokhoziaistvennykh zhivotnykh. Moskva, Izd-vo "Kolos,"
1964. 182 s.

MARKUSHIN, A.P., prof.; LADAN, P.Ye., prof.; GORBELIK, V.I., prof.;
SHKUDOVA, R.I., red.

[Livestock breeding and specialized animal husbandry] kaz-
vedenie sel'sko-khoziaistvennykh zhivotnykh i chastnoe
zhivotnovodstvo. Izd.2., perer. i dop. Moskva, Kolos,
1965. 478 p. (MIRA 19:1)

1. Saratovskiy zooveterinarnyy institut (for Markushin,
Gorbelik). 2. Donskoy sel'skokhozyaystvennyy institut (for
Ladan).

I 23306-66 EWT(d)/EWP(v)/EWP(k)/EWP(h)/EWP(l)
 ACC NR: AP6010537

SOURCE CODE: UR/0376/66/002/003/0314/0323

AUTHOR: Markushin, Ye. M.; Shimanov, S. N.

25
B

ORG: Ural State University (Ural'skiy gosudarstvennyy universitet)

TITLE: On the convergence of optimal control of a countable system of differential equations

SOURCE: Differentsial'nyye uravneniya, v. 2, no. 3, 1966, 314-323

TOPIC TAGS: optimal control, time delay system, regulator analytic design

ABSTRACT: The problem of analytic design of optimal regulators (the concept introduced by A. M. Letov—the Letov problem) is analyzed in the case when the behavior of the control system is described by the system of differential equations with delayed argument

$$\frac{dx(t)}{dt} = ax(t-\tau) + u, \quad (1)$$

where a and $\tau > 0$ are constants and u is the control function. N. N. Krasovskiy (Prikladnaya matematika i mehanika, v. 2, no. 1, 1962, 39-51) has shown that such optimal control u exists and can be found

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UDC: 517.925.2

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ACC NR. AP6010537

at any instant t in the form of a linear functional of a function $x(\theta)$ which describes the behavior of the control system on the preceding interval of time $t - \tau \leq \theta \leq t$. It is indicated that since construction of an exact optimal control function is difficult, an approximate method is considered in which the control function is taken in the form of a series

$$\theta = \sum_{i=1}^n p_i y_i(\lambda_i; x(\theta)), \quad (2)$$

where p_i are constant coefficients and y_i are linear functionals depending on the roots λ_i of the characteristics of system (1) without delay ($\tau = 0$). This method, which is based on the method of decomposing functional spaces developed by S. N. Shimanov (Prikladnaya matematika i mehanika, v. 24, no. 1, 1960; and v. 27, no. 3, 1963), reduces the solution of the problem to the solution of the Letov problem for a finite system of ordinary differential equations. The problem of convergence of series (2) to the optimal control of the original problem is investigated. It is proved that the optimal control u_n for an arbitrarily large n is bounded and its upper bound does not

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ACC NR: AP6010537

depend on the number N . It is shown that the remainder term of the series is majorized by a series of the form $\sum_{n=N}^{\infty} c_n n^{-2+\epsilon}$. Orig. art. has:
57 numbered equations.

[LK]

SUB CODE: 01 / SUBM DATE: 05Jun65 / ORIG REF: 005 / OTH REF: 001
ATD PRESS: 4231

Code 5/31

MOLDAVSKIY, Oleg Petrovich, MARKUSHIN, Gennadiy Nikolayevich;
POLYAKOV, Lev Petrovich; ZELEVSKY, Vladimir
Dmitriyevich; KIFAN WA, . . ., red.

[Improving boring equipment and technology] Sovremen-
stvovanie tekhniki i tekhnologii burenija. [By] O. P.
Moldavskiy i dr. Saratov, Sverdlovskie knizhnoe izdatel'stvo,
1963. 80 p.

MARKUSHIN, Ya.V.

Efficiency of the induced polarization method in the southern Altai.
Razved. i okh. nedr. 30 no.6:32-35 Je '64. (MFA 17:10)

1. Altayskaya geofizicheskaya ekspeditsiya.

L 07942-67 EWT(d)/EWP(1) IJP(c)
 ACC NR: AP6030790

SOURCE CODE: UR/0376/66/002/008/1018/1026

43
4?
B

AUTHORS: Markushin, Ye. M.; Shimanov, S. N.

ORG: Ural State University im. A. M. Gorkiy (Ural'skiy gosudarstvennyy universitet)

TITLE: Approximate solution of the problem of analytic construction of a regulator for an equation with delay

SOURCE: Differentsial'nyye uravneniya, v. 2, no. 8, 1966, 1018-1026

TOPIC TAGS: perturbation theory, automatic control, automatic regulation, optimal control, APPROXIMATE SOLUTION

ABSTRACT: The authors consider

$$\frac{dx(t)}{dt} = ax(t-\tau) + m\xi. \quad (1)$$

which describes the perturbed motion of a system of automatic regulation. Here a and m are constants, $\tau > 0$ is delay, ξ is a control, a functional defined on continuous curves $x(t)$ ($t \geq 0$), and is assumed to satisfy a Cauchy-Lipschitz condition

$$\|\xi[x'(t)] - \xi[x(t)]\|^{(n)} \leq L_t \|x'(t) - x(t)\|^{(n)}. \quad (2)$$

where

$$\|x(\theta)\|^{(n)} = \sup_{[-\tau \leq \theta \leq 0]} |x(\theta)|. \quad (3)$$

UDC: 517.949.22

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L 07942-67

ACC NR: AP6030790

The authors seek $\xi/\bar{x}(\theta)$ such that every solution with any initial function $\varphi(\theta)$
 $x_0(\theta) = \varphi(\theta) \quad [-\tau < \theta < 0] \quad (4)$

as $t \rightarrow \infty$ goes to 0, where the size of

$$I(\xi) = \int_0^\infty \{ax^2(t) + c\xi^2[\bar{x}(t)]\} dt \quad (5)$$

is required to be minimal (a and c are constants). A successive approximation scheme yielding convergence to an optimal control is given. "In conclusion it should be mentioned that this article was discussed at an inter-city seminar on the theory of controlled processes. The authors thank the leader of the seminar, Corresponding member N. N. Krasovskiy of the Academy of Sciences of the SSSR, for his valuable remarks." Orig. art. has: 40 formulas.

SUB CODE: 12/ SUBM DATE: 30Jul65/ ORIG REF: 014/ OTH REF: 002

Curd 2/2 -ref

MARKUSHINA, I

Step 2: Hydrogenation of substituted furans.In name: A. A. Tsvetkov
Name: S. S. Shchegoleva
Date: 1972-05-17

Condensation of furfural with ketones yielded 50-90% of the

following ketones (R = OCH₂CH₂C(=O)CH₃):

b.p. 110-90°	b.p. 158/20°	b.p. 130°	b.p. 130°	b.p. 140-150°
RCOBu, b.p. 130-8°, m.p. 42-5°	RCOC ₂ CH ₃ , b.p. 165-5-6°	m.p. 45-5°	m.p. 45-5°	m.p. 45-5°
RCOPh, b.p. 137°, RCH ₂ COPh, b.p. 167°	RCOCH ₂ CF ₃ , m.p. 54-5°	m.p. 54-5°	m.p. 54-5°	m.p. 54-5°
RCOCH ₂ CH ₂ Ph, m.p. 54-5°	Hydrogenation of these			
EtOH over CuCrO ₂ at 30° and 10-150 atm gave 60%	EtOH over CuCrO ₂ at 30° and 10-150 atm gave 60%			
of the corresponding furfuryl aldehydes, which under the same	of the corresponding furfuryl aldehydes, which under the same			
conditions over Ni changed to tetrahydrofuran. Yield was	conditions over Ni changed to tetrahydrofuran. Yield was			
with 3.5-13% homologs of 1,6-dioxocanes (4-4 homologs).	with 3.5-13% homologs of 1,6-dioxocanes (4-4 homologs).			
The following furfuryl aldehydes were obtained: 3-acetyl-	The following furfuryl aldehydes were obtained: 3-acetyl-			
mp. 147/59°, d ₄ 20 1.068, 3-acetyl-1,5-dihydro-1,4-dioxin-2-one,	mp. 147/59°, d ₄ 20 1.068, 3-acetyl-1,5-dihydro-1,4-dioxin-2-one,			
3-acetyl-, b.p. 120-3.5°, 1,4778, 0.9706; 3-acetyl-1,5-	3-acetyl-, b.p. 120-3.5°, 1,4778, 0.9706; 3-acetyl-1,5-			
301.5°, 1.4710, 0.9800; 3-acetyl-1,5-dihydro-1,4-dioxin-2-one,	3-acetyl-1,5-dihydro-1,4-dioxin-2-one, b.p. 120-3.5°,			
1.4658, 0.9493; 3-acetyl-2-acetyl-1,5-dihydro-1,4-dioxin-2-one,	1.4658, 0.9493; 3-acetyl-2-acetyl-1,5-dihydro-1,4-dioxin-2-one,			
0.9608; 2-acetyl-3,5-dimethyl-3-penten-2-one, b.p. 155-5°,	0.9608; 2-acetyl-3,5-dimethyl-3-penten-2-one, b.p. 155-5°,			
1,4819, 3-acetyl-3-penten-2-one, b.p. 155-5°, 1.5345, 1.0791;	1,4819, 3-acetyl-3-penten-2-one, b.p. 155-5°, 1.5345, 1.0791;			
1-(furan-2-ylmethyl)-2-furylaldehyde, b.p. 140-4°,	1-(furan-2-ylmethyl)-2-furylaldehyde, b.p. 140-4°,			
1,4821, 0.9717; 3-acetyl-1,5-dihydro-1,4-dioxin-2-one, b.p. 151°,	1,4821, 0.9717; 3-acetyl-1,5-dihydro-1,4-dioxin-2-one, b.p. 151°,			
1,4820, 0.9807; 3-acetyl-1,5-dihydro-1,4-dioxin-2-one, b.p. 152°,	1,4820, 0.9807; 3-acetyl-1,5-dihydro-1,4-dioxin-2-one, b.p. 152°,			
0.9891; 3-Acetyl-3-penten-2-one, b.p. 170-73°, 1.5234, 1.0890;	0.9891; 3-Acetyl-3-penten-2-one, b.p. 170-73°, 1.5234, 1.0890;			
Ethoxy-2-acetyl-1,5-dihydro-1,4-dioxin-2-one, b.p. 150-50°,	Ethoxy-2-acetyl-1,5-dihydro-1,4-dioxin-2-one, b.p. 150-50°,			
0.9275; 2-acetyl-3-phenylpropan-2-one, b.p. 140-5°,	0.9275; 2-acetyl-3-phenylpropan-2-one, b.p. 140-5°,			
0.9339; 2-acetyl-3-phenylpropan-2-one, b.p. 140-5°,	0.9339; 2-acetyl-3-phenylpropan-2-one, b.p. 140-5°,			
The following homologs of 3-acetyl-1,5-dihydro-1,4-dioxin-2-one were obtained (R, in 2-position of furfuryl aldehydes): Et, b.p. 150-5°,	The following homologs of 3-acetyl-1,5-dihydro-1,4-dioxin-2-one were obtained (R, in 2-position of furfuryl aldehydes): Et, b.p. 150-5°,			
1,4466, d ₄ 20 0.9843, PP, b.p. 110-13°, 1.4460, 1.0673;	1,4466, d ₄ 20 0.9843, PP, b.p. 110-13°, 1.4460, 1.0673;			
1,4010, 1.4481, 0.9511, 1,4100, 1.4481, 0.9511;	1,4010, 1.4481, 0.9511, 1,4100, 1.4481, 0.9511;			
1,4100, 1.4521, 0.9512, 1,4500, 0.9512, 1,4500, 0.9512;	1,4100, 1.4521, 0.9512, 1,4500, 0.9512, 1,4500, 0.9512;			
113-14°, 1.4522, 1.0884; 2,2-Dimethyl-3-acetyl-1,5-dihydro-1,4-dioxin-2-one, b.p. 113-14°, 1.4522, 1.0884; 2,2-Dimethyl-3-acetyl-1,5-dihydro-1,4-dioxin-2-one, b.p. 113-14°, 1.4522, 1.0884;	113-14°, 1.4522, 1.0884; 2,2-Dimethyl-3-acetyl-1,5-dihydro-1,4-dioxin-2-one, b.p. 113-14°, 1.4522, 1.0884;			
1,4172, 1.0594. In the hydrogenation of the ketone, a further MeOH-acetophenone type with NMe ₂ is obtained. This also occurs 43-70% elimination of the carbonyl O (product isolated in 1st fraction). The linear structure of the ketone is proved by synthesis of the 1-(2-furyl)-3-oxo-2-phenylpropanoic acid from Et ₂ NH and 3-(2-furyl)propanoic acid. The 3-acetyl-3-phenylpropan-2-one and 3-acetyl-3-phenylpropan-2-one had identical properties: 3-acetyl-3-phenylpropan-2-one, b.p. 82.5-41°. The 3-phenylpropan-2-one was similarly obtained with Bu ₂ MeBn. While the 1-(tertbutyldiphenylsilyl)ethane and the CM ₂ test, the 3-phenylpropan-2-one failed to go so as expected. G. M.	1,4172, 1.0594. In the hydrogenation of the ketone, a further MeOH-acetophenone type with NMe ₂ is obtained. This also occurs 43-70% elimination of the carbonyl O (product isolated in 1st fraction). The linear structure of the ketone is proved by synthesis of the 1-(2-furyl)-3-oxo-2-phenylpropanoic acid from Et ₂ NH and 3-(2-furyl)propanoic acid. The 3-acetyl-3-phenylpropan-2-one and 3-acetyl-3-phenylpropan-2-one had identical properties: 3-acetyl-3-phenylpropan-2-one, b.p. 82.5-41°. The 3-phenylpropan-2-one was similarly obtained with Bu ₂ MeBn. While the 1-(tertbutyldiphenylsilyl)ethane and the CM ₂ test, the 3-phenylpropan-2-one failed to go so as expected. G. M.			

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AUTHORS: Til', Z. V.; Markushina, I.; Sapunar, K.; and Ponomarev, A. A.

TITLE: Study of Furan Compounds. Part 7. Two-Stage Hydrogenation of Furfurylidene Ketones (K izucheniyu furanovykh soyedineniy. VII. Dvukhstadiynoye gidrirovaniye furfurylideneketonov)

PERIODICAL: Zhurnal Obshchey Khimii, 1957, Vol. 27, No. 1, pp. 110-116 (U.S.S.R.)

ABSTRACT: The authors describe the results obtained during two-stage hydrogenation of several furfurylidene ketones synthesized with a yield of 60 to 86% during the condensation of furfurole and homologous ketones, namely: furfurylidene-methyl ethyl ketone, furfurylidene-methylpropyl ketone, furfurylidene-methylbutyl ketone, furfurylidene-methylamyl ketone, furfurylidene-methylisohexyl ketone, furfurylidene-neacetophenone, furfurylidene-propiophenone and furfurylidene-benzylideneacetone. The furan alcohols obtained were hydrogenated over kieselguhr catalysts and converted into tetrahydrofuran alcohols. The secondary reaction products obtained were identified as alkyl and aryl homologues of 1,6-dioxaspiro (4,4) nonane. Tables 1 and 2 offer data about the most important physical constants and analyses of all products obtained from hydrogenation. Pressure hydrogenation

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Study of Furan Compounds

of furfurylideneacetophenone and furfurylidene propiophenone in dioxane as solvent and Raney's Ni at 135 - 140° led to immediate hydrogenation of the furan cycle and elimination of the carbonyl oxygen. Experimental data are presented showing that the condensation of furfurole with methylalkyl ketones results in the formation of furfurylidene ketones of normal structure. The properties of a liquid product obtained from the alcohol-phenylisocyanate reaction were not investigated.

Two tables. There are 30 references, of which 8 are Slavic.

ASSOCIATION: Saratov State University (Saratovskiy Gosudarstvennyy Universitet)

PRESENTED BY:

SUBMITTED: February 14, 1956

AVAILABLE:

Card 2/2

5 (3)

AUTHORS: Ponomarev, A. A., Markushina, I. A. SOV/20-126-1-27/62

TITLE: Synthesis of 1,6-Dioxaspiro-(4,4)-nonene-3 Derivatives in the Electrolytic Alkoxylation of γ -Furyl-alkanols (Sintez proizvodnykh 1,6-diokssapiro-(4,4)-nonena-3 pri elektroliticheskom alkoksilirovaniyu γ -furilalkanolov)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 1, pp 99 - 102 (USSR)

ABSTRACT: The synthesis of the substance mentioned first in the title can be carried out by various methods (Refs 1-8). The mechanism of this reaction was described (Refs 5,7). The present paper deals with the formation of cyclic systems of the similar type in the case of the process mentioned in the title. This reaction was detected in 1952 (Ref 9). It consists in the electrolysis of a furan compound solution in the corresponding alcohol with an addition of a small quantity of ammonium bromide in the electrolyte at temperatures below 0°. The reaction mechanism has not been yet definitely explained. The authors completed the construction of the electrolyzer of Clauson-Kaas (Refs 9,10) above all by the substitution of the platinum anode by a coal anode.

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Synthesis of 1,6-Dioxaspiro-(4.4)-nonene-3
Derivatives in the Electrolytic Alkoxylation of
 γ -Furyl-alkanols

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The yield of the dialkoxy-dihydrofuran compounds was on the whole not smaller (Table 1) than that of platinum in this modernized apparatus. Some other substances were for the first time methoxylized in this apparatus. The authors' assumption that an intramolecular reaction with a cyclization takes place in the present case (see scheme) was fully confirmed by experiment. The corresponding dimethoxy derivative of the compound mentioned first in the title was obtained as the main product of the electrolysis of the 1-(α -furyl)-propanol-3,1-(α -furyl)-butanol-3,1-(α -furyl)-5-methyl-hexanol-3 as well as of the tertiary alcohol 1-(α -furyl)-methylpentanol-3 in a methanol solution with a yield of 53-76% of the theoretical one. These yields are much higher than in all other cases of the formation of 1,6-dioxaspiro-(4.4)-nonane and its homologues in the case of the hydrogenation of the corresponding furan alcohols. The properties and the analysis results of the 4 derivatives obtained by the aforesaid method are shown in table 2. The assumed structure was as well experimentally confirmed. I. S. Monakhova assisted in the experimental part. Table 3 gives the

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Synthesis of 1,6-Dioxaspiro-(4.4)-nonene-3
Derivatives in the Electrolytic Alkoxylation of
 γ -Puryl-alkanols

SOV/20-126-1-27/C2

physical constants and the analyses of the 2-methoxy-1,6-dioxaspiro-(4.4)-nonane. There are 3 tables and 11 references, 4 of which are Soviet.

ASSOCIATION: Saratovskiy gosudarstvennyy universitet im. N. G. Chernyshevskogo (Saratov State University imeni N. G. Chernyshevskiy)
PRESENTED: January 17, 1959, by A. A. Balandin, Academician
SUBMITTED: January 14, 1959

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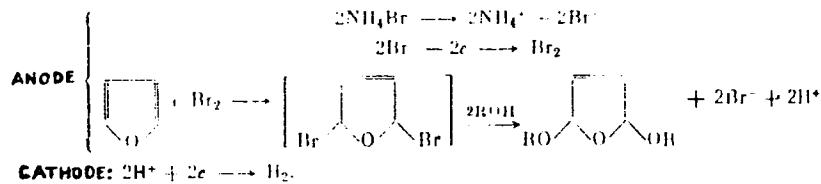
5,500

SG 1

AUTHORS: Ponomareva, A. A., Markushina, I. A.

TITLE: Concerning Study of Furan Compounds. XII. New Data
Concerning Electrolytic Methoxylation of Furan CompoundsPERIODICAL: Zhurnal obshchey khimii, 1966, Vol. 36, No. 4,
pp. 976-981 (USSR)

ABSTRACT: Electrolytic methoxylation of furan compounds containing, in side chains, ester groups or carbonyls in α or β position, was studied. The reaction was conducted, basically, according to the method proposed by N. Clauson-Kaas and others (Acta Chim. Scand., 6, No. 4, 531, 1952) using ammonium bromide as electrolyte:



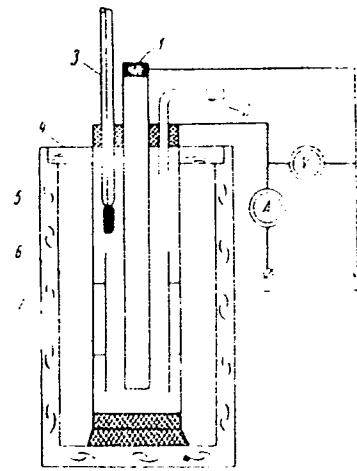
Card 1/8

Concerning Study of Furan Compounds. XII

73275
SOV/73-50-3-474

However, some substantial changes were made in the construction of the electrolyzer. The platinum electrode was replaced with a more available and cheaper carbon electrode. Ni sheets were used as cathodes.

Fig. B. Diagram of electrolyzer for alkoxylation. (1) Carbon anode; (2) gas outlet; (3) thermometer; (4) cover; (5) container for cooling mixture; (6) cooling mixture; (7) nickel cathode.

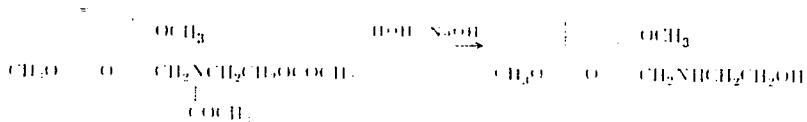


Card 2/8

Concerning Study of Purine Compounds
S6,7,8,9,10,11,12,13

36,7,8,9,10,11,12,13

Experiments show that the new direct new electrolyzer is as efficient as the previously used electrolyzer with platinum anode, and in some cases the yield of the products of reduction is even higher. The dimethoxytetrahydroxymethyl or diacetoxymethyl groups of the corresponding compounds, after the new electrolysis, are listed in Table 1. Dimethoxyethyl monomer, formed by N-acetofurfurylaminomethyl acetate were hydropolymer:



Many of the dimethoxydinitroarins obtained were converted into corresponding dimethoxytetrahydroxymethyl by their hydronation in glacial acetic acid at 1 atm pressure at -10°C in the presence of Raney nickel. The dimethoxytetrahydroxymethyl obtained for the first time are listed in Table 1. The starting compound is as:

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Concerning Study of Furan Compounds. XII

76292
SOV/10-40-3--1/2

the conditions of their methoxylation are given. In
Tables 4 and 5, I. S. Monakhova took part in the
experimental work. There are 1 figure; 5 tables and
10 references, 1 Danish, 7 Swedish, 2 Soviet.

ASSOCIATION: Saratov State University (Saratovskiy gosudarstvennyy
universitet)

SUBMITTED: April 3, 1964

Card 4/8

Concerning Study of Furan Compounds.
XII

Table 2

78245 SOV/(9-30-3-49/U)

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i> ^w	<i>n</i> ²⁰ _D	<i>d</i>		<i>M</i> _D		<i>%c</i>		<i>%H</i>		<i>%N</i>		
					<i>e</i>	<i>f</i>	<i>e</i>	<i>f</i>	<i>e</i>	<i>f</i>	<i>e</i>	<i>f</i>	<i>e</i>	<i>f</i>	
<chem>*C(=O)c1ccccc1OC</chem>	78	158-160° (760)	—	1.4326 (npn 25°)	—	—	—	—	—	—	—	—	—	—	—
<chem>*C(=O)c1ccccc1OC(C)C</chem>	67	158-160 (760)	—	1.4289	—	—	—	—	—	—	—	—	—	—	—
<chem>*C(=O)c1ccccc1OC(C)C(=O)OC</chem>	68.5	118-120 (12)	—	1.4458	—	—	—	—	—	—	—	—	—	—	—
<chem>*C(=O)c1ccccc1OC(C)C(C)C(C)C(=O)OC</chem>	46.7	105-105.5 (1)	1.105	1.4578	248.6	239.21, 50.59	56.23	57.12, 57.26	57.38	8.32, 7.74	7.88	—	—	—	—
<chem>*C(=O)c1ccccc1OC(C)C(C)C(C)C(=O)OC</chem>	67.1	133-134 (7)	1.0743	1.4526	238.3	244.28	61.42	61.53	59.15, 59.44	59.00	8.27, 8.36	8.25	—	—	—
<chem>*C(=O)c1ccccc1OC(C)C(C)C(C)C(=O)OC</chem>	51.5	103-104 (2)	1.077	1.4568	202.5	200.2	50.64	50.65	60.42, 60.59	59.98	8.39, 8.46	8.06	—	—	—
<chem>*C(=O)c1ccccc1OC(C)C(C)C(C)C(=O)OC</chem>	55.0	120-122 (1.5)	1.134	1.4750	213	210.2	50.46	51.15	53.19	53.19	8.98	8.43	7.34, 7.21	6.89	—
<chem>*C(=O)c1ccccc1OC(C)C(C)C(C)C(=O)OC</chem>	51	99-101.5 (5)	0.9670	1.4464	—	—	50.07	50.88	66.92	67.20	10.01	10.35	5.75	—	—

Concerning Study of Furan Compounds.

78295 SOV/79-30-3-49/69

XII

Key to Tables 2 and 3: (a) Formula; (b) yield (%);
 (c) bp (pr in mm); (d) molecular weight; (e) found;
 (f) calculated.

Table 3

a	b	c	d_4^{20}	n_D^{20}	d		MR _D	%C		%H		%N	
			e	f	e	f		e	f	e	f	e	f
<chem>*C(=O)c1cc(OCC(=O)C*)c(*)cc1</chem>	84.4	142-143° (6)	1.0472	1.4420	258	246.3	62.23	62.089	58.61, 58.85	58.51	9.15, 9.06	9.00	-
<chem>*C(=O)c1cc(OCC(=O)C*)c(*)cc1</chem>	67.5	124.5-126.5 (4)	1.040	1.4432	210.2	202.2	51.58	51.12	50.50, 50.48	50.39	9.45, 9.60	8.97	-
<chem>*C(=O)c1cc(OCC(=O)C*)c(*)cc1</chem>	86.6	124.5-125 (15)	1.115	1.4630	208	205.2	51.11	51.62	52.77, 52.68	52.67	9.22, 8.82	9.33	6.92, 6.96, 6.83

Card 6/8

Concerning Study of Various Compounds
XII

a	b	c	d	e	f
<chem>O=C(=O)c1ccccc1</chem>	0.5	3.9 3.0		12°	22.7
<chem>O=C(=O)c1ccccc1</chem>	0.	3.5 2.8	6 12	16	22.5
<chem>O=C(=O)c1ccccc1</chem>	0.3	3.0 2.9	8 13	13	21.0
<chem>O=C(=O)c1ccccc1</chem>	0.3	3.7 2.5	6 15	14	23.0
<chem>O=C(=O)c1ccccc1</chem>	0.39	3.5 3.0	5 14	13	26.0
<chem>O=C(=O)c1ccccc1</chem>	0.09	3.0 1.5	9 11	14	8.9

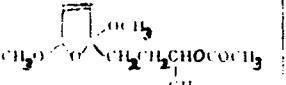
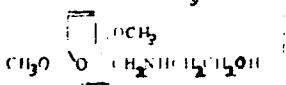
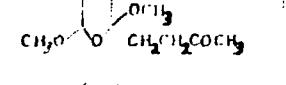
Key: (a) Formula; (b) amount of starting compound (μ -mole);
 (c) current (in amp); (d) voltage (in v); (e) temperature in
 cell; (f) number of amp/hr.

Card 7/8

Concerning Study of Furan Compounds.
XII

78295 SOV/79-30-3-49/69

Table 5

a	b	c	d
	0.08	30°	100-120
	0.008	40	60-100
	0.1	20	50-75

Key: (a) Formula; (b) amount of compound (g-mole);
(c) temperature; (d) pressure (in atm).

Card 8/3

PONOMAREV, A.A. & MARKSHINA, I.A.

"uran compounds. Part 13: Formation of derivatives of 1,6-dioxo-
spiro [4.4] non-3-ene during the electrolytic methoxylation of
γ-furyl alkanols. Zhur. ob. khim. 31 no. 2:554-560 F '61.
(MIRA 14:2)

1. Saratovskiy gosudarstvennyy universitet.
(Dioxaspiro[4.4]nonene)

USOV, Yu.N.; MARKUSHINA, I.A.

Possibility of producing ceresin and structural bitumen from
paraffinic deposits of the Saratov oil fields. Uch.zap. SGU
(MIRA 17:3)
75:55-57 '62.

PONOMAREV, A.A.; MARKUSHINA, I.A.

Furan compounds. Part 26: Synthesis of compounds of 1,6,2-trioxa-dispiro-(4,1,4,2)tridecane by the electrolytic alkoxylation of α , α' -furan-3-dialkanols. Zhur.ob.khim. 33 no.12:3955-3961 D '63. (MIRA 17:3)

1. Saratovskiy gosudarstvennyy universitet imeni Chernyshevskogo.

PICULEVSKIY, G.V.; KOSTENKO, V.G.; MARKUSHKIN, N.I.

Uniformity of the abietinol of Ruzicka and Meyer. Zbir. ob. khim.
30 no.10:3489-3492 0 '61. (MIRA 14:4)

1. Leningradskiy gosudarstvennyy universitet.
(Abietyl alcohol)

KOMER CO., R.F.; REINHOLD, W.; S. HANCOCK, JR.; C. J. REED, JR.

Lastic materials in a type of film substrate. In: U.S. Pat. No. 3,210,320. Date: May 10, 1965. Inventor: W. Reinhold.

1. Institut Jean Dorel/Exaco Filman, Inc.

SEMELEVICH, V.G.; MARKUSHKIN, V.G.; ZAYONCHKOVSKIY, A.D.; ZOLOTOV, V.I.;
BERNSHTEYN, M.Ch.; YABKO, Ya.M.; SMETKIN, Yu.A.

The KhOM-2 machine for the manufacture of continuous filament fiber bases. Kozh.-obuv.prom. 4 no.11:20-24 N '62.

(MIA 15:11)

(Leather, Artificial) (Nonwoven materials)

MARKUSHIN, Ya.V.

Provisional characteristics of the potentials of induced polarization. Geol. i geofiz. no.10:128-132 '65.

(MIRA 18:12)

1. Altayskaya geofizicheskaya ekspeditsiya, g. Ust'-Kamenogorsk.
Submitted January 4, 1965.

MARKUSIC, Tomislava, dipl. inz. kemije; VRANESEVIC, Marija

A rapid method of determining CaO in iron ores. Kem
ind 13 no. 2: 79-81 F '64.

A rapid method of determining SiO₂ in iron ores. Ibid.:82-84.

l. Institute of Metallurgy, Sisak.

CCOUNTRY : CZECHOSLOVAKIA H
CATEGORY : Chemical Technology. Chemical Products and Their
Applications. Leather. Gelatine. Tanning Materials.*
ABS. JOUR. : RZehh., No 17, 1959, No. 63220
AUTHOR : Brazej, A.; Markusovska, L.
INSTITUTE : -
TITLE : Accelerated Determination Method for Chromium in
the Spent Chromate Solutions in the Presence of **
ORIG. PUB. : Veda a vyzk. v prumysl. kozedeln., 1958, 4, 117-
-125

ABSTRACT : Developed is a method in which an acidified so-
lution of KMnO_4 is used as an oxidizing agent.
The oxidation process in a strong acid medium
 (H_2SO_4) and the formed MnO_2 is removed with HCl .
The titration is made with the aid of $(\text{NH}_4)_2\text{Fe}(\text{SO}_4)_2$ solution or iodometrically. -- D. Gorin.

**Organic Substances.

*Industrial Proteins.

Card: 1/1

NAME : N. A. VYSHKIN
CATEGORY : Synthetic Dyes and Plastic Products and
Chemical Materials. Leather. Fibre. Gelatin.*
ABS. JOUR. : RZhKhim., No. 1 1960, No. 3'22
AUTHOR : Chumakov, A.; Vyshkina, L.
TITLE : Analiz i otsenka kachestva vodorodno-
zavodskogo gelyatina
ORIG. PUB. : Vod. i vysch. v prirode monografiya, 1958., s.
123-132
ABSTRACT : The possibilities of simplifying the laborious
method of the quantitative determination of
chlorine in solutions of chlorinated rubber
and oil by reaction with Stannous Standard, were
studied. The advantages and disadvantages of
different analytical methods were criticized
briefly. It is proposed to replace hydrogen
peroxide with potassium peroxodisulfate.

ICARD: 1/1

CZECHOSLOVAKIA / Chemical Technology, Chemical Products and Their Application. Leather, Fur, Gelatin. Tanning Materials. Industrial Proteins. H-35

Abs Jour : Ref Zhur - Khimiya, No 5, 1959, No. 17986

Author : Blazej, A.; Markusovska, E.

Inst : Not given

Title : Complexometrical Method of Determination of Calcium in the Ashing

Orig Pub : Kozarstvi, 1958, 8, No 4, 117-120

Abstract : No abstract given

Card 1/1

CZECHOSLOVAKIA/Chemical Technology. Chemical
Products and Their Applications.
Leather. Furs. Gelatin. Tanning
Materials. Industrial Proteins.

H

Abs Jour : Ref Zhur-Khimiya, No 6, 1959, 21968

Author : Markusovska, E., Blazej, A.

Inst :

Title : Determination of Magnesium and Calcium
in Leather Ash by Titration.

Orig Pub : Kozarstvi, 1958, 3, No 5, 133-135

Abstract : No abstract.

Card : 1/1

MARKUSZEWICZ, A. I.

"Ciągi rekurencyjne" (Mathematics), by A. I. Markuszewicza. Reported in
New Books (Nowe Ksiazki), No. 15, August 1, 1955

MARKUSZEWICZ, A. I.

"Pola i logarytmy" (Fields and logarithms), by A. I. Markuszewicz. Reported
in New Books (Nowe Książki), No. 12, June 1^K, 1956.

5

PTA

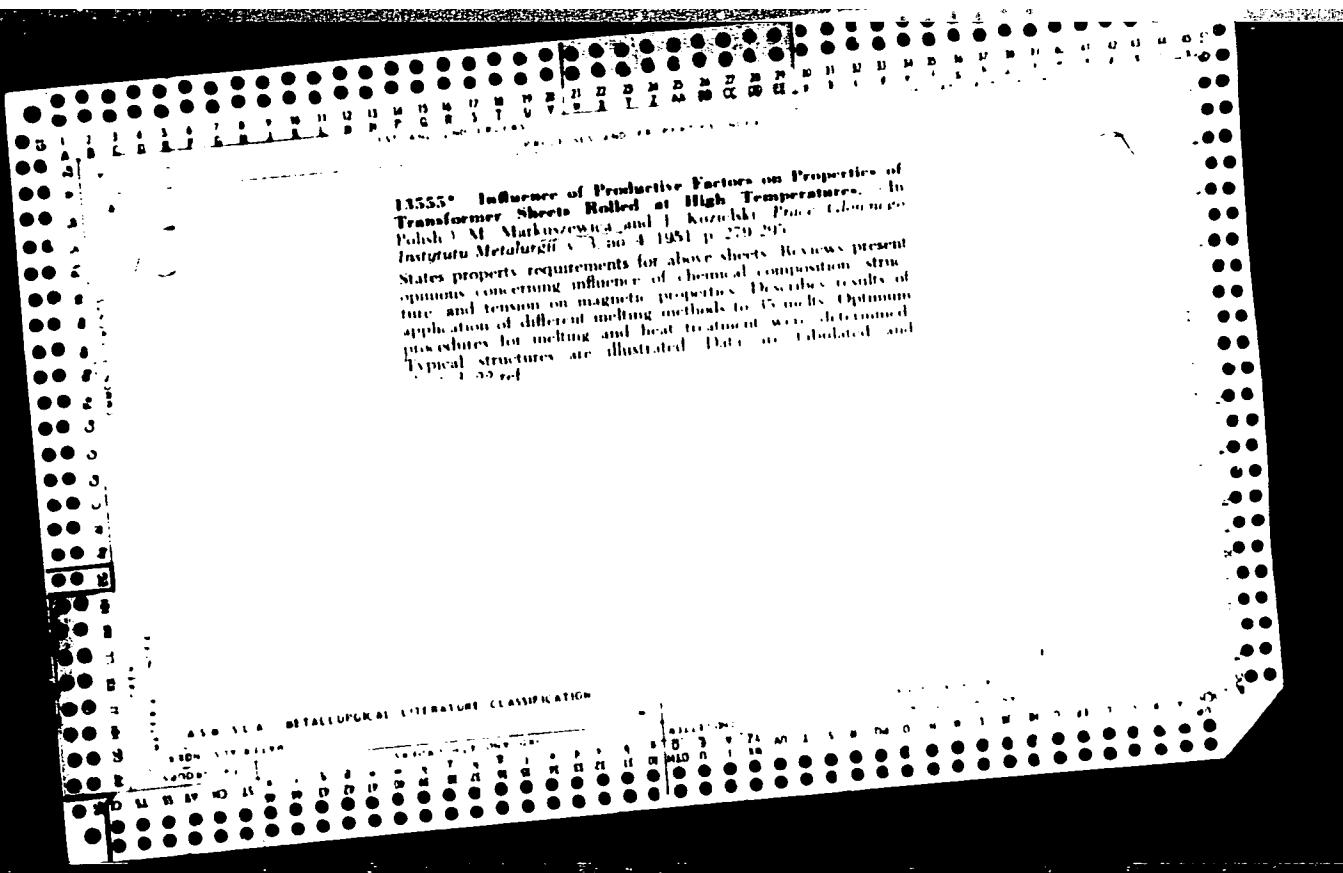
1147

621.318.22

Markuszewicz M. Soft Magnetic Materials, with Particular Reference
to Transformer Plates.

„Materiały magnetyczne miękkie ze szczególnym uwzględnieniem
blach transformatorowych”. Przegląd Elektrotechniczny, No. 1—2—3.
1951, pp. 69—73, 6 figs.

Properties to be expected of soft magnetic materials. Review of
the principal materials: iron, silicon steel and alloys steel with high
content of component elements (Ni, Co etc.)



Rolling - Mill Practice

S

The Problem of Transformer Sheets in the Light of New
Research. M. Markuszewski. *Metal (Katowice)*, 1952,
19, 1, 7-15. [In Polish]. The influence of chemical composition
position, method of steel preparation, temperature conditions
on the properties of transformer sheets are discussed. A. G.

MARKUSZEWSKI, M.

2394 669.15-194 : 069.14.018.58-163 : 621.78 : 621.97 : 620.188

Markuszewski, M., Gromek, J. "Effect of Various Additions, Hot Working, and Heat Treatment on the Magnetic Properties of Low Carbon Steels".

(3)
Met

Polish Technical Abst.
No. 4, 1953
Metallurgy

"Wpływ niektórych dodatek, przeróbkę plastyczną : obróbkę cieplną na właściwości magnetyczne stali niskowęglosowej". (Prace Instytutów Min. Hutniczych No. 1), Katowice, 1953, PWT, 22 pp., 50 fig., 30 tab.

In the theoretical part of this paper the applications of low carbon steel in electrotechnics are described, together with the effect of various factors, such as content of additions, grain size, orientation of crystalline particles and mechanical strains, on the magnetic properties of the material. The authors examined a steel from 4 melts from a basic open hearth furnace containing 0.03% of C and a steel from 23 melts from a 7 kg. electric induction furnace. When testing the effect of heat treatment, it was found that for large sections (100-200 mm dia.) magnetic properties depend entirely upon the zone segregation. In the case of thin sheets, better magnetic properties are connected with the partial decarburization during the annealing and rolling. The effect of heat treatment on the magnetic properties was tested on sheets pickled and covered with scale (by normalizing) and then box annealed. Gaseous atmospheres of hydrogen and nitrogen, dry and wet, were used. It was found that annealing performed in high temperatures (1100-1250°C) contingent on the atmosphere used, may, owing to the increased content of nitrogen and oxygen in steel, have a detrimental influence on the magnetic properties. These phenomena appear with particular distinctness when annealing is carried out in a nitrogen

atmosphere or in sheet's covered with scale. The beneficial effect of scale appears distinctly at lower temperatures. The coercive force of 0.4—0.6 Oersted was obtained in 1 mm sheets, due to grain growth and a considerable decarburization (up to 0.009% of C), after a 24 hours annealing at a temperature of about 800°C. Sheets and rods pickled and pack-annealed at temperatures of 1100 and 1200°C showed, although they had a low coercive force immediately after the treatment, a considerable increase of that force as a result of steel ageing due to a higher content of nitrogen in the metal. It was found, when testing the effect of additions, that low carbon steel, containing about 0.6% of Si and up to 0.25% of Al, does not show any noticeable change in magnetic properties arising from the ageing. The addition of 0.2% of Si and of 0.2% of Al was found to be the most suitable.

(3) MET

MARKUSZEWICZ, Mieczyslaw

"Defects in Forged Steel Products."

SO: Hutnik, No. 5, Stalinogrod, May 1953 (Air, Treasure Island # 144566, Feb. 1954,
Unclassified.)

MARKUSZEWICA, M.

Chemical Abst.
Vol. 48 No. 8
Apr. 25, 1954
Metallurgy and Metallography

(S) 7167
Effects of various additions, hot working, and heat-treatment on the magnetic properties of low-carbon steel [M. Markuszewica and J. Garvecki, Prace Inst. Minierol. i Mineralogii, 1-23 (1958).] The results are: (1) Rimmed steel shows, because of a substantial segregation of impurities, large variations of magnetic properties depending on the area of sampling. (2) Hot-working of steel bars with diams. ranging between 20 and 100 mm, shows no effect on the magnetic properties. Improvements noticed in rolling strip were attributed to partial removal of C. (3) Recrystn. under crit. conditions (10% reduction at 800°) causes grain growth and improvement of magnetic properties. (4) Cold reduction produces no favorable effect. (5) Annealing of steel strip in the atm. of moist H at 800° shows substantial decarbonization, grain growth, and higher magnetic properties. (6) Heat-treatment at high temps. (1100 and 1250°) shows strong influence of the atm. on the magnetic properties of the material. Presence of O and N causes a decrease in the magnetic properties due to the diffusion of the gases into steel. (7) Rimmed steel shows the effect of aging following heat-treatment, because of N absorption by the metal. (8) Si in amt. of 0.6 or Al in amts. of 0.25% or a combination of both (0.2% of each) prevents successful aging. 74 references. M. O. Holowaty

MARKUSZEWICZ, M.

B. T. R.
Vol. 3 No. 5
May 1954
Metals—Mechanical and Physical
Properties

6930* Production of Silicon Sheets of High Initial Permeability. (Polish.) M. Markuszewicz and A. Zawada. *Prace Instytutów Ministerstwa Hutniczego*, v. 5, no. 5, Sept-Oct 1953, p. 259-276.

Properties of Si sheets for use in tele-communication systems. Effect of metallurgical and structural factors on magnetic permeability in low fields. Tables, graphs, micrograms, diagram. 17 ref.

MARKUSZEWICZ, M.

6
A.Y

13055* (Soft Magnetic Materials.) Materiały magnetyczne miękkie, M. Markuszewicz. Prace Instytutu Ministerstwa Hutańcia, v. 6, no. 1, 1954, p. 1-12.

Effects of metallurgical and structural factors. Manufacture of pure Fe, and Fe alloyed with Si, Al, Ni, and Co. Tables, graphs, diagrams. 95 ref.

10/15/54

Markuszewicz, M.

POL

The Production of Hot Rolled Transformer Sheets with Low Watt Losses. A. Markuszewicz, J. Gromek, and A. Zawadzki (Prace Instytutu Stalow i Huty, 1964, 6, (3), 105-110). [In Polish]. The authors tried to decrease the watt losses in sheets by an additional anneal, by a change in annealing conditions, and by a selection of sheets according to their position in blocks. These trials, however, brought only a small improvement. Experimental melts in an 8-ton electric furnace were then prepared under various operating conditions. Intensive boiling during initial oxidation, slow boiling, boiling at the end of the heat and the highest possible temperature, were tried. No relationship between the silicon content in ferronsilicon and watt loss was observed. The best results were obtained by pouring molten metal from the ladle into the furnace and by substituting calcium silicide for part of the ferronsilicon. The amount of calcium silicide was about 33% of the total silicon in the steel. Twenty-five melts in an 8-ton electric furnace and three melts in a 20-ton O.H. furnace in which the above method was used gave satisfactory results. The decrease in watt losses of about 0.6 W. per kg. was obtained. Another advantage of this method was that sheets of low watt losses had good permeability when placed in a magnetic field of low intensity - v.v.

"APPROVED FOR RELEASE: 06/14/2000

CIA-RDP86-00513R001032520013-4

MARKUSZEWICZ, M.

POLAND

"Production Problems Relating To Iron and Iron-Silicon Alloys for Electrical Applications
by M. MARKUSZEWICZ; Prace Instytutow Ministerstwa Hutnictwa, Gliwice, Nos. 2-4, 1955.


APPROVED FOR RELEASE: 06/14/2000

CIA-RDP86-00513R001032520013-4"

MARKUSZEWICZ M.

✓ Manufacturing problems of iron and iron-silicon alloys for electro-
technical uses. M. Markuszewicz. "Prace Inst. Miniat. Muzeum"
1955, 7, 121-139. A detailed discussion of accepted knowledge and
techniques in manufacture of mild low-carbon steel and silicon-iron
alloys with good magnetic properties, together with the summary of
the current practice in Polish industry. Emphasis is laid on the
danger of indiscriminate application of data obtained on pure alloys
under laboratory conditions to technical products and processes.
Each stage of manufacture, melt, casting and subsequent thermal
and plastic treatment are considered with reference to the effect
of composition, impurities, temperature, annealing atmosphere,
mechanical treatment, etc. on the magnetic properties of the finished
alloy. Optimum manufacturing conditions are summarized in
English. (12 references) *Metal* *S. Król*

Sf LFH

Markuszewicz, M.

14985
[initials] (Polish) Effect of Primary Structure and Heat Treatment on Magnetic Properties of Silicon Steel of About 4% Si. Wykryw struktury pierwotnej i obróbki cieplnej na właściwości magnetyczne stali o zawartości około 4% Si. M. Markuszewicz. Prace Instytutu Ministerstwa Huty i Górnictwa, 1956, p. 281-308 + 11 plates.

Includes a critical survey of problems pertaining to the domain structure and the theory of coercive force. Concludes that no distinct association exists between the presence of secondary domain structure and magnetic properties.

RG AMY
pebb

MARKUSZEWICZ M.

POLAND/Magnetism - Ferromagnetism

F-4

Abs Jour : Ref Zhur - Fizika, No 2, 1958, No 3624

Author : Markuszewicz, M.

Inst : Institute of Metallurgy of Iron, Poland

Title : Influence of Primary Structure and Heat Treatment on the Magnetic Properties of Steel with 4% Silicon

Orig Pub : Prace inst. Min-wa huth., 1956, 8, No 6, 281-308

Abstract : An investigation was made of the influence of various methods of melting and treatment on the magnetic properties of sheet transformer steel. The results obtained add details to the available conception concerning the influence of non-metallic inclusions, the grain dimensions, and other factors on the properties of semi-finished and finished sheets. If silico-calcium is used in the melting instead of ferrisilicium, a metal is obtained with small contents of non-metallic inclusions, large grain, and high magnetic properties. Annealing of untextured sheets in atmosphere of hydrogen at 1250° increases the induction in the region of weak fields and reduces the induction at medium fields; a similar annealing of

Card : 1/2

Card : 2/c

MARKUSZEWICZ, M.

J. G. L. and H. J. S. J. 1957. "Effect of annealing on magnetic properties of sheets containing about 2.5% silicon." In: A. Markuszewicz and J. Czernicki (Inst. Met. Zelazno, Gdansk, Poland) Proc. Inst. Met. Zelazno, Vol. 125, No. 1957, p. 35.

In 1957, English scientists studied the magnetic properties of steel sheets containing 2.5% Si. They found that the magnetic properties of the steel were improved by annealing at temperatures up to 1100°C. However, the improvement was limited. Such improvements could be made only on a limited scale by heat treatment of the steel plates, i.e., the attrition of the surface.

On the other hand, the magnetic properties of industrial steels, i.e., steels containing 2.5% Si, were found to improve when they were annealed at temperatures from 600°C to 800°C. The main interest, however, was directed towards steels with 2.5% Si. It was found that the lowest specific losses take place when the annealing is carried out between 800 and 880°C and in less than 30 hrs. Annealing of sheets at 1100°C results already in a small increase in specific losses and also in decrease of induction in strong magnetic fields. In general, the specific losses are smaller when the sheets are etched before annealing. The worsening of properties, especially at high temps., is caused primarily by the detrimental surface reactions and especially by the diffusion of O to the metal. The scale which is formed on the surface of the metal causes decarbonizing of the rest of the steel. However, the presence of 2.5% of Si counteracts the decarbonizing process which Si prevents the diffusion of O in steel. Moreover, the presence of Si increases the diffusion rate of the O.

Hawkins

25(1)

POL/39-59-12-2/16

AUTHOR: Markuszewicz, Mieczyslaw, Docent, Doctor Engineer;
Groyecki, Jan, Master, Engineer

TITLE: Possibilities of Quality Improvement of Hot Rolled
Transformer Sheet Steel

PERIODICAL: Hutnik, 1959, Nr 12, pp 476-482 (Poland)

ABSTRACT: The authors try to devise a method of producing hot rolled transformer sheet steel qualitatively nearer to cold rolled sheet steel. After reviewing existing methods they describe their Institute's present research into methods of cold finishing of hot rolled sheets, for the purpose of improving their crystallographic orientation. This demands that the sheets be finished at temperatures of the range of 1150°C. Summing up they state that improvement can be obtained through: 1) the reduction of noxious admixture by appropriate smelting, removing of gasses by application of vacuum, removing of surplus carbon, avoidance

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Possibilities of Quality Improvement of Hot Rolled Transformer Sheet Steel

of oxygen and nitrogen diffusion and admixture of aluminum to silicon iron; 2) the obtaining of a "coarse grain" structure of the steel; 3) one-way working of the steel from ingot to ready sheet; 4) obtaining crystallographic orientation through cold rolling at 40% pressure at the finishing stage; 5) production of belts instead of sheets, by hot welding and cold finishing; 6) covering the sheets or belts with ceramic insulation (they quote the French patent: 1,143, 190). The Institute of Iron Metallurgy has successfully reduced the amount of Si in transformer steel to 2.9%. There are 3 tables, 7 figures and 10 references, 4 of which are Polish, 2 Soviet, 1 Czech and 3 German.

ASSOCIATION: Instytut Metalurgii Zelaza (Institute of Iron Metallurgy, Gliwice).

Card 2/2



Distr: 4E2c

✓ Improvement of quality of hot-worked transformer sheet
steel. M. Markuszewicz and J. Groyecki (Inst. Metallurgii
Zelazna, Gliwice, Poland). *Hutnik* '26; 476-82(1969).

Procedures for reduction of the amt. of harmful contaminations to steel by vacuum working of liquid metal, decarburization of the half-finished product, and its protection against excessive diffusion of O and N while heating the material were discussed. Al was undesirable, and for de-oxidation the application of Fe-Si low in Al was recommended. The desirable coarse-grained metallurgical structure could be secured by final heat-treatment at relatively high temps.; favorable results depended on the chem. purity of the steel. Further improvement could be achieved by one-directional plastic working of the product from ingot to metal sheet, development of partial crystallographic anisotropy by final cold-rolling with 40% reduction, by manual. of transformer steel in the shape of strip instead of sheet, and by employing - i.e. insulating coatings on sheets or stripe. The manuf. of transformer sheets with low elec. losses was possible even when Si was reduced to 2.9%. Good quality of that sort of sheet was referred to low losses on hysteresis, and the ease in handling the product with lower Si content was emphasized.

W. Tomaszewski

Distr: 4526

✓ *4*
Manufacture and properties of cold-rolled transformer sheets. M. M. Mirmohammadi, J. Ghorroki, and A. Zayyani. *Prace Techniczne, 17, 28-34 (1980).* The material and properties of cold-rolled transformer sheets prepared from 3 heats of transformer steel (contg. 2.0-3.5% Si and melted in a 20-ton elec. furnace) were described. By intense mixing of metal with slag during tapping and pouring from one ladle to another the S content decreased to 0.005%. The ingots were hot rolled to 2.5 mm thick strip in which, as a result of annealing at 130-30°, the C concn. was reduced by 50%. After pickling, the strip was cold rolled to 0.35 mm. in thickness with one intermediate annealing. The final heat treatment consisted of annealing at 500° or under H. The magnetic properties of the sheets were comparable with those of foreign origin.

V. Tomaszewski

J-MJC (JP)

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A052/A101

AUTHORS: Groyecki, Jan, Markuszewicz, Mieczyslaw, Stankiewicz, Mieczyslaw

TITLE: Method of steel bath desulfuration

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 11, 1962, 41, abstract
11V248P (Pol. pat., no. 45133, October 16, 1961)

TEXT: The method of steel desulfuration consists in the following: on melting the charge the oxidizing slag is drawn off completely and the pool is reduced with Fe-Si, afterwards 1.5 - 2.5% lime and 0.3 - 0.5% fluorite are added to the pool; after 20 minute heating a mixture of 0.1 - 0.35% Mg with 0.4 - 1.4% lime is blown by means of an inert gas into the pool; metal along with the slag is discharged from the furnace into a ladle without a stopper; out of this ladle the smelt is poured back into the furnace and then it is discharged into a ladle with a stopper.

Ye. Mikhalik

[Abstracter's note: Complete translation]

Card 1/1

MARKUSZEWICZ, Mieczyslaw, doc. dr inz.; GROVECKI, Jan, mgr inz.

Effect of the method of steel founding on the magnetic properties
of hot rolled transformer sheets. Hutnik P 29 no.9:313-317 S '62.

1. Instytut Metalurgii Zelaza, Gliwice.

MARKUSZEWICZ, Mieczyslaw; GROYECKI, Jan; TANADA, Aleksander

Application of textured transformer tape for the production of
magnetic cores. Wiad elektrotech 30 no.10:331-337 0 '62.

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MARKUSZEWICZ, Mieczyslaw; GROYECKI, Jan; ZAWADA, Aleksander

C-type transformer cores produced from textured magnetic stripes, "anizoperm" type. Przegl telekom 34 no.8:228-234 Ag '62.

1. Instytut Metalurgii Zelaza, Gliwice.

MARKUSZEWICZ, M.; WYSLOCKI, B.; STOINSKI, K.

Influence of temperature and of some technological factors
on the disaccommodation phenomenon in silicon iron. Acta
physica Pol 23 no.1:59-67 Ja '63.

1. Institute of Iron Metallurgy, Gliwice.

MARKUSZEWCZ, M., prof. dr inz.; GROYECKI, T., mgr inz.; ZAWADA, A., mgr inz.

Determination of basic technological parameters influencing the loss of transformer metal sheets under the production conditions of the Lenin Steel Works. Biul inf inst metal zel no.2;8-10 '64.

1. Department of Magnetic Materials of the Institute of Iron Metallurgy, Gliwice.

MARKUSZEWSKI, F.

Bucking of a straight bar subject to compression on the part of its length.
p. 241

Vol. 12, no. 7, July 1955
INZYNIERIA I BUDOWNICTWO
Warszawa

Source: Monthly List of East European Accessions, (EEAL), LC, Vol. 5, no. 2
Feb. 1956

MAR USZEWSKI, F.

Dwelling constructions of large-sized slabs in the German Democratic Republic.
p. 243

Vol. 12, no. 7, July 1955
INZYNIERIA I BUDOWNICTWO
Warszawa

Source: Monthly List of East European Acquisitions, (EEAL), LC, Vol. 5, no. 2
Feb. 1956

WOLSKI, Adam, mgr. inz.; MARKUZE, Jerzy, mgr. inz.

Modern method of plate surface preparation before copying
in flat printing. Poligrafika 13 no.8:13-14 Ag '61.

MARKUZE, Jerzy, mgr. inż.

Printing rollers made of gelatin-glycerin mass. Pt.1.
Poligrafika 13 no.9:6-8 S '61.

1. Centralne Laboratorium Poligraficzne, Warszawa.

MARKUZE, Jerzy, mgr. inz.

Printing rollers made of gelatin-glycerin mass. Pt.2.
Poligrafika 14 no.2:8-12 F '62.

1. Centralne Laboratorium Poligraficzne, Warszawa.

MARKUZE, Jerzy, mgr. inz.

Some more remarks on the acclimatization of offset paper. Poligrafika
14 no.3:8-10 Mr '62

1. Centralne Laboratorium Poligraficzne, Warszawa.

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July 25, 1964.

A new method for the determination of substantive dyes
on the fiber and the absorptive ability of cellulose materials.
K. M. Markus. *Rabenstrudyns Teknol. Progr.*,
1934, Vol. 12, p. 47 (1934). The colorimetric determination of the
dye after extraction with a 10% pyridine soln. is reported. A
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properties of artificial fibers. *Ibid.* 14, No. 1, 40 (1935). - Through *Chem. Zentral.* 1935, II, 2963.

W. A. Minar

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ASD-LLA-METALLURGICAL LITERATURE CLASSIFICATION

